BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS")	)	GN Docket No. 96-228

TO: The Commission

COMMENTS OF
AEROSPACE AND FLIGHT TEST RADIO COORDINATING COUNCIL

Aerospace and Flight Test Radio Coordinating Council ("AFTRCC"), by its counsel, hereby submits its comments on the Notice of Proposed Rulemaking (FCC 96-441, released November 12, 1996) in the above-captioned proceeding.

INTRODUCTION

AFTRCC is an organization comprised of major corporations engaged in the design, development, and production of aircraft, space vehicles, and their major components. Members of AFTRCC include the principal U.S. aerospace manufacturers. Given its members' role in the development, testing and production of aircraft and space vehicles, AFTRCC serves as the FCC-recognized non-Government advisory committee for coordination of the flight test frequencies shared by non-Government and Government users.

The subject Notice seeks to implement the Congressional directive to reallocate and auction the bands 2305-2320 and 2345-2360 MHz. The band 2310-2360 MHz is currently reserved by virtue of footnote US328 for primary use by the mobile and radiolocation services until

> January 1, 1997 or until broadcasting-satellite (sound) service has been brought into use in such a manner as to affect or be affected by the mobile and radiolocation services in those service areas, whichever is later....

Moreover, by virtue of footnote US 276,

> ... use of the band 2310-2390 MHz by the mobile service is limited to aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles or major components thereof. The following six frequencies are shared on a co-equal basis by Government and non-Government stations for telemetering and associated telecommand operations of expendable and re-usable launch vehicles whether or not such operations involve flight testing: 2312.5, 2332.5, 2352.5, 2364.5, 2370.5, and 2382.5 MHz. All other mobile telemetering uses shall be secondary to the above uses.

AFTRCC members utilize 2310-2360 MHz frequencies for their flight test operations. Hence, AFTRCC members are affected by the Notice.

DISCUSSION

AFTRCC does not oppose the proposed reallocation. Rather, AFTRCC comments to ensure that there be no confusion as to the status of flight testing upon adoption of a report and order.

The Notice proposes that flight testing retain its footnote primary status in the band 2320-2345 MHz. See proposed revisions to footnotes US328 and US276; see also Notice, note 18. This is only as it should be inasmuch as the 2320-2345 MHz allocation would not be changed by the proposal.

AFTRCC likewise supports proposed footnote USyyy which preserves co-equal status for the two discrete expendable/re-useable launch vehicle frequencies which happen to fall within the 2305-2320 and 2345-2360 MHz bands.[1] These frequencies were allocated in Gen. Docket No. 89-16 in order to support the nascent

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[1] Proposed footnote USyyy reads:

> The bands 2310-2320 and 2345-2360 MHz are also available for aeronautical telemetering and associated telecommand operations for flight testing of unmanned aircraft, missiles or major components thereof on a secondary basis to the Wireless Communications Service. The following two frequencies are shared on a co-equal basis for telemetering and associated telecommand operations of expendable and re-usable launch vehicles whether or not such operations involve flight testing: 2312.5 and 2352.5 MHz. Other mobile telemetering uses may be provided on a non-interference basis to the above uses.

U.S. commercial launch industry. 5 FCC Rcd 493 (1990). With new generations of low earth orbit mobile satellite constellations moving toward operational status, there will be a surge in demand for launch services. The specified frequencies play an important role in this regard and, thus, it is entirely appropriate that these frequencies be afforded protection.

Apart from this, however, AFTRCC has a concern with the WCS out-of-band emission limits proposed in Rule 27.53. Notice, Appendix at 14; see also Notice, para. 34. Specifically the proposed limits are expressed in terms of transmitter power factors. What this approach does not include is an allowance for antenna gain or path loss. This is an important omission from the flight test standpoint. A word or two of background may be helpful here.

Flight testing is, by its nature, a high risk enterprise. Interference-free telemetry reception is essential so that ground controllers and flight engineers are able to monitor critical aircraft parameters such as engine temperatures, stress on air-foils, and airframe vibration, to name just a few. In the event ground personnel detect an unsafe condition, they are able to warn the flight crew so that immediate corrective measures can be taken. In short telemetry provides a real-time lifeline for aircraft safety.

Interference-free telemetry is also essential to the efficient conduct of flight test programs. The typical flight test can involve scores of personnel, a wide variety of ground equipment, possibly chase aircraft, the appropriate weather conditions, and the like. Millions of dollars can be tied up in even one flight test -- not to speak of the value of the test aircraft itself which can represent an R&D investment well in excess of $1 billion. Any delay in a flight test due to the presence of a potentially interfering signal can mean exorbitant expense. Moreover, the data generated by a test flight must be carefully analyzed to determine whether the aircraft performed as predicted. Any interruption or degradation in that data can mean loss of the flight's data and the costly need to re-fly the test.

Finally, it must be recognized that there is very limited space aboard aircraft and missiles for extra equipment. Telemetry transmitters must be small; and data must be transmitted over large distances using low signal levels. When these signals are subjected to the extreme vehicle gyrations which can occur during a flight test, the end result is a signal which starts out low and fluctuates down to a barely detectable level. It should come as no surprise, therefore, that telemetry receivers are designed to be ultra-sensitive; they require interference protection down to a level of -177 $dBW/m^2/4$ kHz. The absence of

an appropriate out-of-band emission limit for the 2320-2345 and 2360-2390 MHz bands accordingly leaves flight testing without adequate protection. AFTRCC urges that this matter be rectified in the report and order.

CONCLUSION

Accordingly AFTRCC urges the Commission to preserve the footnote primacy for telemetry in the band 2320-2345 MHz; supports co-equal protection for the two launch vehicle frequencies; and urges adoption of the specified protection level.

Respectfully submitted,

AEROSPACE AND FLIGHT TEST RADIO
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